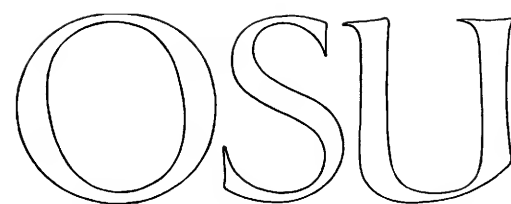


# FREE FORM INPUT FOR OS-3 FORTRAN

By

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FFIN IS A FREE FORMAT INPUT FUNCTION FOR USE WITH FORTRAN UNDER OS-3. THIS FUNCTION ALLOWS INPUT TO COME FROM ANY VALID TYPE OF INPUT HARDWARE INCLUDING CARDS, MAGNETIC TAPE, FILES, OR TELETYPES. TITLES AND HEADINGS FOR REPRODUCTION ON THE OUTPUT DOCUMENT MAY BE INCLUDED WITH THE DATA AND REPRODUCED BY THIS FUNCTION IF DESIRED.

FFIN ACHIEVES FREE FORM INPUT BY SCANNING A BUFFER CONTAINING A SINGLE LINE OF TEXT AT A TIME. TITLES OR HEADINGS ARE COPIED INTO CORRESPONDING POSITIONS ON THE OUTPUT FORM; NUMERIC DATA IS THEN DECODED BY A LEFT TO RIGHT SCAN. AFTER THE ENTIRE LINE HAS BEEN SCANNED, OR WHENEVER THE USER CHANGES INPUT UNITS, A NEW LINE IS READ AND THE SCAN PROCESS IS REPEATED.

VALID NUMERIC DATA FOR FFIN INCLUDES ALL FORMS OF FORTRAN FORMATTED OUTPUT. DATA FIELDS ARE SEPARATED BY EITHER SPACES OR COMMAS OR BOTH. OBVIOUSLY, THE DATA SEQUENCE PRESENTED BY A SERIES OF INPUT LINES MUST AGREE WITH THE SEQUENCE OF CALLS TO THE FFIN FUNCTION WITHIN THE USER'S PROGRAM.

EXAMPLES OF VALID NUMERIC DATA ARE:

1 45.34, 34.3E-123 34.-102

1.E6,-0.000001,284

X=345.82

(2.3045E23P )

VALID TITLE OR HEADING TEXT CONSISTS OF ANY STRING OF VALID CHARACTERS STARTING AND ENDING WITH A SINGLE QUOTE (''). THE QUOTE MARKS MAY BE EITHER REPRODUCED ON THE OUTPUT OR BLANKED OUT AT THE USERS OPTION. THE USER ALSO HAS THE OPTION OF IGNORING ALL HEADING TEXT, IF DESIRED. IF ONLY A SINGLE QUOTE MARK IS FOUND ON A LINE THEN ALL INFORMATION BETWEEN THE QUOTE AND THE END OF THE LINE IS CONSIDERED TO BE A TITLE. NUMERIC DATA IF INCLUDED BETWEEN QUOTE MARKS, WILL ALSO BE CONSIDERED AS TEXT, RATHER THAN DATA.

EXAMPLES OF VALID HEADING TEXT ARE:

'ABCDEFGG X = 3'

'4.34527E-92

' THIS IS A HEADING '

ALL OTHER TEXT WHICH DOES NOT FIT THE DEFINITION OF EITHER HEADING OR NUMERIC DATA IS IGNORED. IF AN INVALID CHARACTER IS ENCOUNTERED WHILE SCANNING NUMERIC DATA, THEN THE DECODING PROCESS IS RE-INITIALIZED.

EXAMPLES OF TEXT WHICH WOULD BE IGNORED ARE:

ABCDEFGG

AB67(235.92Q

4.2407245E-28M

AN ADDED FEATURE OF THE FREE FORM INPUT FUNCTION IS THAT IT WILL ACCEPT ANY VALID DECIMAL OSCAR OUTPUT CONTAINING FEWER THAN 12 DIGITS. DIGITS AND THE LETTER P ASSOCIATED WITH THE PRECISION INDICATION OF OSCAR ARE IGNORED WITHOUT DISRUPTING THE INPUT SCAN.

THE FFIN FUNCTION USES UP TO FOUR INTEGER PARAMETERS.  
THESE PARAMETERS IN THE ORDER IN WHICH THEY APPEAR ARE:

#### LUNIN

THE FIRST PARAMETER SPECIFIES WHICH LOGICAL UNIT THE USER WISHES TO SCAN FOR THE INPUT INFORMATION. THIS UNIT MUST BE EQUIPPED AS A FILE, MAGNETIC TAPE, CARD READER, OR TELETYPE. THIS PARAMETER MUST BE SPECIFIED EACH TIME THE FUNCTION IS CALLED. THE LOGICAL UNIT NUMBER USED MUST BE IN THE RANGE 1 TO 55 INCLUSIVE; LOGICAL UNIT 60 IS ALSO VALID.

IF THE INPUT UNIT REFERS TO A TELETYPE, THE TELETYPE WILL CARRIAGE RETURN, LINE FEED, AND PRINT <> AT THE LEFT MARGIN INDICATING READINESS FOR INPUT. THE USER SHOULD END THE INPUT LINE WITH CARRIAGE RETURN AND LINE FEED. A FILE MARK MAY BE ENTERED FROM A TELETYPE BY DEPRESSING CONTROL W.

#### LUNOUT

THE SECOND PARAMETER SPECIFIES WHICH LOGICAL UNIT THE USER WISHES TO RECEIVE THE OUTPUT OF TITLING AND HEADING TEXT. THIS UNIT MUST BE EQUIPPED AS A VALID OUTPUT DEVICE; THE LOGICAL UNIT NUMBER USED MUST BE IN THE RANGE BETWEEN 1 AND 55, INCLUSIVE; LOGICAL UNITS 61 AND 62 ARE ALSO VALID. IF THE USER FAILS TO SPECIFY THIS PARAMETER, THEN THE PARAMETER USED THE LAST TIME THE FUNCTION WAS CALLED WILL BE USED; THIS PARAMETER IS INITIALLY SET TO 61 WHEN THE SUBROUTINE IS LOADED.

LL

THE THIRD PARAMETER SPECIFIES THE LINE LENGTH WHICH THE USER WISHES TO HAVE THE FFIN FUNCTION SCAN FOR INPUT INFORMATION. IF THIS LINE LENGTH IS LONGER THAN THE ACTUAL LINE PRESENTED, THEN BLANKS ARE USED TO FILL IN THE REMAINDER OF THE LINE; IF THE LINE LENGTH IS SHORTER THAN THE ACTUAL LINE THEN THE INFORMATION ON THE RIGHT HAND END OF THE LINE IS CHOPPED OFF AT THE SPECIFIED LINE LENGTH. IF THIS PARAMETER IS NOT SPECIFIED BY THE USER IN A FUNCTION CALL, THEN THE LAST PREVIOUS VALUE IS USED. THIS VALUE IS SET TO 72 WHEN THE SUBROUTINE IS LOADED.

NT

THE FOURTH PARAMETER IS USED TO INDICATE WHAT IS TO BE DONE WITH TEXT ENCLOSED WITHIN SINGLE QUOTES (''). IF THIS PARAMETER IS NEGATIVE, THEN HEADINGS ENCLOSED BY THESE QUOTE MARKS ARE IGNORED AS IS ALL OTHER NON-NUMERIC TEXT. IF THE PARAMETER IS ZERO, THEN THE TEXT BETWEEN THE QUOTE MARKS WILL BE REPRODUCED ON LUNOUT EXACTLY AS IT APPEARS ON THE INPUT LINE. THE QUOTE MARKS WILL BE STRIPPED OFF BEFORE THE TRANSFER TAKES PLACE. IF NT IS POSITIVE, THE HEADING WILL BE REPRODUCED INTACT ALONG WITH THE QUOTE MARKS. THIS IS USEFUL TO PASS TITLE INFORMATION ALONG THROUGH MULTIPLE PASS PROGRAMS.

IF NO VALUE FOR THIS PARAMETER IS SPECIFIED BY THE USER, THEN THE LAST PREVIOUS VALUE WILL BE USED. NT IS SET TO ZERO WHEN THE FUNCTION IS LOADED.

WITH ANY OF THESE OPTIONS, ANY OUTPUT WHICH WOULD FALL ON THE FIRST CHARACTER OF THE OUTPUT LINE WILL BE REPLACED BY A BLANK.

## SUMMARY OF PARAMETERS AND THEIR USE

PARAMETER	USE	INITIALLY ASSUMED VALUE
LUNIN	INPUT LOGICAL UNIT	MUST BE SPECIFIED; MUST BE VALID FORTRAN UNIT.
LUNOUT	OUTPUT LOGICAL UNIT	61; MUST BE VALID FORTRAN UNIT
LL	MAXIMUM LENGTH OF INPUT LINE	72
	( + DUPLICATE HEADINGS )	
	( AND QUOTE MARKS. )	
	( )	
NT	( Ø DUPLICATE HEADINGS )	Ø
	( ONLY. )	
	( )	
	( - SKIP HEADINGS )	

## EXAMPLES OF THE USE OF THIS FUNCTION

1. TO INPUT FROM LOGICAL UNIT 17:

X = FFIN(17)

Y = X\*\*2+FFIN(17)

2. TO INPUT AND ROUND OFF TO THE NEAREST INTEGER VALUE:

I = FFIN(60)+20440000000000000B

3. TO READ CARDS HAVING SEQUENCE NUMBERS IN COLUMNS 76 THROUGH 80  
WHICH ARE TO BE IGNORED:

VAR = FFIN(60,61,75)

4. TO READ FROM LUN 17, DUPLICATE HEADINGS WITH QUOTES TO LUN 23  
AND SCAN 72 CHARACTER LINES:

VAR = FFIN(17,23,72,+1)

THE FOLLOWING STEPS HAVE BEEN USED AS A FORTRAN INPUT  
CONTROL ROUTINE. INPUT MAY COME FROM ANY VALID INPUT HARDWARE

REWINDABLE UNITS ARE REWOUND BY THE ROUTINE BEFORE INITIAL  
USE.

INPUT IS FROM LOGICAL UNIT 100 IF LUNIN IS INVALID OR UNDEFINED.

DATA SETS FOR BATCH PROCESSING ARE SEPARATED BY FILE MARKS.

TWO CONSECUTIVE FILE MARKS ARE USED TO INDICATE END OF BATCH.

PROGRAM DATA INPUT IS TERMINATED BY A FILE MARK BEING READ.

#### PROGRAM SAMPLE

INTEGER HARDWARE, HW, FMR

C HW=1=FILE; 2=TAPE; T=TTY, 4=CARDS

C INPUT FROM LUNIN, OUTPUT OF HEADINGS ON LUNOUT

C DETERMIN HARDWARE TYPE

HW = 0

IF (HARDWARE(LUNIN) .EQ. 1) HW = 1

IF (HARDWARE(LUNIN) .EQ. 4) HW = 4

IF (HARDWARE(LUNIN) .EQ. 5) HW = 2

IF (HARDWARE(LUNIN) .EQ. 6) HW = 3

IF (HW .GT. 0) GO TO 1003

CALL UNEQUIP(LUNIN)

CALL EQUIP (LUNIN,000000144B)

```
      HW = 3
1003 IF (HW .LT. 3) REWIND LUNIN
      FMR = 0
201  WRITE(LUNOUT,907)
907  FORMAT('1')
C    FIRST PROGRAM INPUT STATEMENT
      VAR = FFIN(LUNIN,LUNOUT)
      IF ((EOF(LUNIN)) .GT. 0 .AND. FMR .GT. 0) GO TO 2003
      FMR = 0
      .
      .
      .    (REMAINDER OF INPUT)
      .
      IF (EOF(LUNIN)) GO TO 903
      .
      .
      .    (REMAINDER OF PROGRAM EXCLUDING END)
      .
      .
903  FMR = 1
      IF (HW .EQ. 1) IF (EOD(LUNIN)) 2003,2002
      GO TO 2002
2003 WRITE(LUNOUT,2001)
2001 FORMAT('1 END OF BATCH')
      STOP
2002 FMR = 1
      GO TO 201
      END
```